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blankets followed, and lastly the oilcloth, and she was put to bed, with another pile of blankets on top. Then some spirits were got to keep the heart-action up, which by this time had almost ceased. Before this the mother felt sure the child was dying, and was nearly frantic with the idea. Hot brandy and water was given in a teaspoon every few minutes, and the case was watched with no little anxiety. She had not been in the pack over fifteen minutes before improvement became apparent. The dark rings round the eyes were less marked, the eyes themselves brighter and less sunk, and the blue and green tints less ghastly. Our hopes began to revive, and our fears to lose their terror. In five minutes more the improvement became so decided that with great gratitude I felt that the novel plan was a grand success, and the danger over. She now became conscious, and, evidently feeling the benefit of the spirit stimulus, asked occasionally for her "toddy," which she, knowing as much about it as she did of snakes and bulldogs, called "vinegar and milk." As the need and benefit of it grew less, she liked it less, and finally refused it. After something over an hour, we took her out of the pack, and were delighted to see that all the swelling, blotches, stiffness, and discoloration had completely disappeared, and Amy was herself again. She was now washed down in cool water, to close the pores and prevent catching cold, and put to bed as usual. She was left with strict injunctions that I should be called up if anything went wrong during the night, but my sleep was not disturbed. Next morning I went to see my little patient, and found her at the breakfast table, with as good an appetite as ever. After that we can excuse the mother for thinking that the hot sweating-pack was the panacea for "all the ills that flesh is heir to."

But some will ask, Why call this a case of snake-bite? When she recovered, we questioned her as to the size and appearance of the "bulldog," and she described it as "a big, long, pretty thing." When asked how many legs it had, she said, "No legs; a big pretty thing, as long as my arm, all shiny." But evidence still more definite was at hand. A few days after, the father, who was up-country at the time of the occurrence, sank a well near where she had fallen, and where there was a lot of long grass and loose timber, and, having struck water, stopped for a rest and a cup of tea. When he returned, a black snake (*Pseudechys porphyraicus*), having smelt the water, was down in the well. He came to tell me that he thought he had caught Amy's bulldog. Then we took her to the well without telling her anything of what was in it, and asked her if she had ever seen a thing like that; and directly she saw it she said, "Yes, that's the bulldog that bit me."

Of course the ligature-cut-and-suck method is best when applied in time, and when the bitten spot is known; but it would be utterly useless in such a case as this, where the poison had already been carried all over the body. The method here advocated would be applicable, I believe, to almost all cases of poisoning that had reached the same stage, whether from snakes, spiders, scorpions, insects, and such like, or from poisons taken by the mouth, whether drunk as liquids or eaten as poisonous fish, etc.; and I have no doubt would save many a valuable life after the venom had got too far through the system for local sucking, or even the stomach-pump, to be of any avail.

ON THE INTRODUCTION OF THE EUROPEAN BARK-BEETLE-DESTROYER (CLERUS FORMICARIUS L.) TO AMERICA.

BY CAMILLO F. SCHAUFUSS, DIRECTOR, MUSEUM LUDWIG SALVATOR, MEISSEN, GERMANY.

DIE forstlichen Verhältnisse Europas und Amerikas sind durchaus verschieden:

In dem alten Europa — wir haben hier also die älteren Culturstaaten, namentlich Mitteleuropa, im Auge — finden wir eine Jahrhunderte alte, rationelle Forstbewirtschaftung durch akademisch gebildete, fachkundige Männer, infolgedessen, was uns als erste Vorbedingung für einen *geordneten* Waldbau erscheint, ein vorzügliches Strassenwesen innerhalb der Forsten. Damit ist ein leichter und billiger Transport der geschlagenen Bäume vorhanden.

In dem jungen Amerika haben wir noch grosse Strecken ganz jungfräulichen Gebietes, sonst grossentheils eine verhältnissmässig junge, ja, wohl *sehr* junge Forstwirtschaft; infolgedessen ein noch ungenügend entwickeltes oder unentwickeltes Strassenwesen innerhalb der Forsten, und damit eine schwere und theure Abfuhr der Hölzer.

In Europa ferner: eine dichte Bevölkerung, mithin ein flotter Absatz für das Holz, Rinden und Zweige *an Ort und Stelle*.

In Amerika: eine dünnbesäte Bevölkerung, also Mangel an Absatz, langer und kostspieliger Transport der Baumstämme bis zum Verkaufsplatze, während die Wipfel und Zweige der Bäume wegen der ungenügenden Wege und theuren Fortschaffung meist im Walde liegengelassen werden müssen.

Es ist unter diesen Umständen gar nicht möglich, gegen auftretende Waldverwüster, wie solche die Insektenwelt in so grosser Zahl stellt, mit den, beispielsweise in dem forstlich hochentwickelten Deutschland üblichen, *radicalen* Vertilgungsmaassregeln vorzugehen, auf welche einen Blick zu werfen wir uns für einen späteren Aufsatz vorbehalten.

Nun hat die Natur fürsorglich gar wohl darauf gesehen, dass in ihrem Haushalte das Gleichgewicht erhalten bleibe; sie hat deshalb auch dem Ueberhandnehmen der einzelnen Thiere ein Ziel gesetzt, indem sie ihnen Feinde zugesellte. So haben besonders die Insekten, ausser den Vögeln, sehr viele Nachsteller unter ihresgleichen. Da ist die grosse Zahl der Raubinsekten aller Ordnungen, welche als Strassenräuber über alle Kerfe herfallen; dann giebt es besondere Feinschmecker, die sich nur an eine Fleischsorte halten, deshalb allenthalben mit ihrem Nahrungsthier zusammen vorkommen; und endlich die heimtückischen Schleicher, die entozoischen Parasiten, welche in so grosser Zahl unter den Hymenopteren und Dipteren sich finden.

Bei der Natur ging der Forstmann in die Lehre. Ratzeburg,¹ der grosse bahnbrechende deutsche Forstentomologe, berichtet von 1868 in Posen (Preussen) vorgenommenen Versuchen mit Uebertragung von Maulwürfen auf von Engerlingen (Larve des Maikäfers) bedrohte Kulturflächen, Versuchen, die nicht ohne Erfolg blieben. Weiter hat derselbe Gelehrte die Waldameise (*Formica rufa*)², sowie Schlupfwespen nach von Schmetterlingsraupen heimgesuchten Gegenden übertragen, und andere Fachmänner sind seinem Beispiele gefolgt. In neuester Zeit hat namentlich C. V. Riley, soviel ich gehört habe, wiederholt Experimente mit der Translocation von Schlupfwespen gemacht.

Wie im July dieses Jahres Mr. Andrew D. Hopkins von der West Virginia Agricultural Experiment Station in Morgantown den Lesern unseres Blattes mittheilte³, ist in den letzten Jahren in West Virginia der Borkenkäfer, *Dendroctonus frontalis* Zimm., in solchen Unmassen aufgetreten, dass auf einem Raume von 10,000 square miles 75% aller Nadelbäume kranken oder abstarben.⁴ Der genannte Staat gehört aber zu denjenigen, wo eine rationelle Waldkultur, mithin eine rationelle Vertilgung des Borkenkäfers noch nicht möglich ist. Mr. Hopkins fasste deshalb den Gedanken, um wenigstens zu thun, was möglich ist, um dem Waldfeinde entgegenzutreten, nachdem er beobachtet hatte, wie *Clerus dubius* F. sich alle Mühe gab, mit den Scolytiden aufzuräumen, ihm einen Helfer in seinem guten Werke zur Seite zu stellen.

Europa und Nordamerika haben seit langer Zeit, wie dies der rege Verkehr zwischen beiden Erdtheilen und die Gleichartigkeit des Klimas mit sich bringt, gegenseitig ihre Schädlinge ausgetauscht: ich erinnere an den Kartoffelkäfer (*Leptinotarsa decimlineata* Say) in Deutschland und an den Kohlweissling

¹ Ratzeburg, Die Waldverderber, 1841, pp. 21, 22.

² Ratzeburg, Die Waldverderber, 1868, II., p. 429.

³ Science, Vol. XX., No. 495.

⁴ Dies wird erklärlich, wenn man die beträchtliche Fruchtbarkeit der Scolytiden kennt. In der Mitteleuropäischen Forstinsektenkunde stellen hierüber Judeich und Nitzsche folgendes Rechenexempel auf: Nehmen wir an, ein Mitte April fliegendes Weibchen habe in seinem Muttergange 90 Eier abgelegt, so können wir mit Sicherheit darauf rechnen, dass im Anfang Juni wenigstens 30 Stück davon zu fortpflanzungsfähigen und wirklich begatteten Weibchen sich entwickeln. Legt jedes dieser 30 Weibchen wieder einen Muttergang mit 90 Eiern an, so produciren sie also zusammen 2700 Stück, und wird Anfang August beim dritten Fluge wieder nur ein Drittel davon zu Weibchen, so nagen diese schon 900 Muttergänge und belegen sie mit 8100 Eiern. Gelangt von diesen wieder nur ein Drittel im nächsten Frühjahr zum Eierlegen, so kommen im April bereits 27,000 Nachkommen des einen im vorhergehenden April geflogenen Weibchens zur Fortpflanzung und können nun 2,430,000 Eier ablegen!

(*Pieris brassicae* L.) in den Vereinigten Staaten. Warum also nicht auch die Nützlinge?

Mr. A. D. Hopkins that wohl sehr gut, sein Augenmerk auf Europa zu richten.

Und in der That haben wir in *Clerus formicarius* L. einen Käfer, der nicht nur in seinem Aeusseren, in Grösse und Färbung, seinem amerikanischen Bruder, *Clerus dubius* F., überaus ähnelt, sondern dem Letzteren auch in seinen Lebensgewohnheiten gleicht. Er ist, sowohl als Larve, wie als Imago, ein scharfer Feind der Nadelholz-Borkenkäfer, gleichviel ob sie auf Kiefer oder Tanne leben, und dabei recht zahlreich.

Diesen wählte Mr. Hopkins zur Einführung nach Amerika.

Um sein Ziel sicher zu erreichen, setzte er sich mit dem durch seine klassische Monographie berühmten Scolytiden-Specialisten Eichhoff und mit mir in Verbindung und kam im August nach Europa, hier die Lebensbedingungen des Thieres zu studiren und zu sammeln.

Mr. Eichhoff schrieb mir, während Herr Hopkins im Elsass sammelte, dass derselbe "mit seltenem Geschick und grossem Glück" arbeite, und ich selbst konnte dies sehr bald aus eigener Anschauung bestätigen, als ich mit Mr. Hopkins gemeinschaftlich mehrere Tage in den sächsischen Wäldern auf Cleriden fahndete. Wir fanden die Larve in allen Stadien des Wachstumes, die Puppe, die eben entschlüpfte Imago, und den kräftigen, lebhaften Käfer in ihrem kunstvollen Winterquartieren innerhalb der Rinde.

So kann denn Mr. Hopkins zufrieden auf den Erfolg seiner Reise blicken, denn er nahm eine stattliche Zahl Cleriden in allen Stadien, der Sicherheit halber in verschiedener Weise verpackt, mit nach Hause. Und da es wohl keinem Zweifel unterliegt, dass der weitaus grössere Theil der in der Winterruhe befindlichen Thiere gesund ankommt, — wenn nicht übertriebene Cholerafurcht etwa Herrn Hopkins Schätze durch Disinfection verdirbt, — so kann im Frühjahr mit dem Acclimatisationsversuche begonnen werden.

Für genügenden Nachschub wird von mir eventuell gesorgt werden, um Mr. Hopkins's Experiment gelingen zu lassen.

COLIAS EDUSA AND COLIAS HYALE.

BY A. HEATH, LONDON, ENGLAND.

GREAT BRITAIN this year has been favored with an abundance of these beautiful insects; from every part come reports of innumerable captures, especially of *C. Edusa*, many insects being taken at one throw of the net. *C. Hyale* has also been, I may say, plentiful when we consider its comparative rarity here; friends of mine report taking during a few days as many as four or six this season. I have myself taken four fine specimens in as many days. The first specimen I took in June, but it was the only example of *Colias* that I saw until August; as a rule these insects are never taken in England until August. In 1886 we had a similar year; enormous numbers of *C. edusa* were to be seen, one entomological friend told me he had seen a certain field in Kent yellow with them. It seems most extraordinary that this year we should have had such an abundance of this particular insect, when last year scarcely one was to be seen even in their favorite localities.

Some entomologists believe that they come across the English Channel (over 20 miles of water) in swarms, but if this were the case, surely someone would see them arrive or on their arrival before they scattered over the country. Then, if this were so, why do we not get an annual visit in quantity? The insect is always in abundance on the continent of Europe, and there is also an abundance of many other kinds of butterflies that we seldom or never see here. My idea respecting these occasional abundant swarms is that butterflies' eggs are indestructible, and will lie on the ground for years until a favorable season arrives.

The eggs of *Colias* are laid on the food-plant, various forms of *Trifolium*; this is not only their food, but the food of every kind of four-footed animal, domestic and otherwise, inhabiting this country (except carnivora), and the whole field or crop of *Trifolium* is eaten either in a green or dry state. What, then, be-

comes of the eggs deposited? They must be eaten up almost entirely, and if not indestructible they would be destroyed. This seems not to be the case, and it is probable that they can pass through the animal uninjured by the heat of its body, and so be again distributed over the ground. Without some such theory it seems almost impossible to account for the large numbers found in a cultivated country following a year of scarcity like last year, especially when we remember the enormous number of larvæ destroyed by ichneumon and other countless enemies, bad seasons, etc.

NOTES AND NEWS.

THE New York Academy of Sciences has recently organized a biological section which will hold monthly meetings. At the opening meeting, Oct. 17, Professor Henry F. Osborn acted as chairman. The following papers were presented. Bashford Dean, "On *Dionæa* under its Native Conditions near Wilmington, N.C.," the results of experiments emphasizing the plant's erratic sensibility and its special adaptability for capturing ground insects; N. L. Britton, "On a species of *Hieracium*;" E. B. Wilson, "On the Artificial Production of Twins and Multiple Embryos in *Amphioxus*." The paper dealt mainly with the peculiarities of double monsters produced (as in Driesch's experiments on *Echinus*) by shaking apart the blastomeres of two- and four-celled stages (v. *Anatomischer Anzeiger*, 1892). Every gradation exists between two perfect and separate bodies, each half the normal size, and four in which the only indication of duality consists of a bilobed condition of the archenteron. In the double gastrulas the long axes of the two halves may form any angle with each other, and the two blastopores when separate may be turned in any direction. In cases where the two blastopores face each other, the two bodies are united by a bridge of tissue at one side, essentially as in the double gastrulas of certain earthworms.

— As cotton-seed meal is gradually coming into use in Ohio as a valuable adjunct to the ration for dairy cows, and as the scarcity and consequent high price of corn the present season may tempt some farmers to add this meal to the pig ration, it seems advisable to call attention to bulletin 21 of the Texas experiment station (located at the Agricultural and Mechanical College of Texas, College Station P. O.). In this bulletin Director G. D. Curtis reports the results of a long series of experiments in feeding cotton-seed to pigs, from which he comes to the conclusion that there is no profit whatever in feeding cotton-seed in any form to pigs, whether the seed be boiled, roasted, or ground. The ground seed seems to have produced the worst results, causing the death within six to eight weeks of a large proportion of the pigs to which it was fed, and especially of the medium and small-sized shoats. The boiled seed was less injurious, but roasted seed was almost as fatal as the meal. These pigs were fed alongside of similar pigs which had corn instead of cotton-seed, and the corn-fed pigs remained in perfect health. The symptoms produced by the cotton-seed are described as follows: The first sign of sickness, appearing in from six to eight weeks after cotton-seed meal is added to the ration, is a moping dullness of the animal, with loss of appetite and tendency to lie apart. Within the course of twelve to thirty-six hours, often within the shorter time, the animal becomes restless; staggering in his gait; breathing labored and spasmodic; bare skin showing reddish inflammation; sight defective, and both the nervous and the muscular systems feeble and abnormal in action. The fatal cases all show "thumps" — spasmodic breathing, and in many instances the animal will turn in one direction only, following a fence, or building wall, so closely as to strike his nose against projections in a vain endeavor to push outward in that one direction which he tries to take. If no fence or building intercept him he may travel in a circle — large or small according to the mildness or acuteness of the malady in his particular case. When exhausted by his efforts the animal drops down suddenly — sometimes flat upon his belly, sometimes dropping on his haunches with his fore legs well apart to keep from falling over — almost always with the evidence of more or less acute internal pain. At death a quantity of bloody foam exudes from mouth and nostrils.